

IBM Lotus Notes®

Riverbed® Steelhead® Appliances Accelerate Lotus Notes

Most enterprises operate Lotus Notes across wide area networks (WANs) to deliver critical services such as email, calendaring, and collaborative applications. But WAN connections are costly and the remote performance of Notes is often degraded by limited bandwidth and high network latency. If the enterprise wishes to improve the productivity of Notes users, it must ensure that performance is acceptable in all locations, including those with little bandwidth and high latency.

Riverbed Performance Features for Lotus Notes

Riverbed Steelhead appliances accelerate the network traffic associated with many common Lotus Notes activities. Riverbed offers unique application layer optimizations for Lotus Notes, developed cooperatively with IBM, to improve performance when sending email attachments, server-to-server replication, and server-to-client replication. Interactive applications such as calendaring, messaging, and remote access also benefit from Riverbed's TCP optimizations.

Document-based transactions such as file sharing benefit from TCP optimizations as well, and experience further acceleration from scalable data referencing (SDR). SDR eliminates massive amounts of redundant data from the wire, ensuring faster transfers and lower bandwidth utilization. Email attachments get these same advantages and also benefit from latency avoiding optimizations. Riverbed also supports optimizing Lotus Notes v8.5.

Performance Improvements

Tests of Lotus Notes 8.0.2 have shown that Steelhead appliances significantly improve the performance over the WAN for activities such as sending and opening large email attachments. Cold run file transfers are approximately 5 times faster, while warm runs show results that are a dramatic 22 times faster. Simultaneously, bandwidth utilization is reduced by up to 92 percent*. In collaborative environments, warm runs are the most critical, as they are representative of the bulk of information traversing the network.

Riverbed optimization, encryption, and compression features in Lotus Notes were disabled and replaced by corresponding functionality of the Steelhead appliances, but performance comparisons were made using runs with these features on. This gives the best comparison of like-to-like performance. Note that port compression doesn't have to be switched off as it was in these tests.

TEST RESULTS

- Steelhead appliances accelerate network traffic associated with all common Lotus activities
- File transfers are more than 23 times faster
- Bandwidth utilization is reduced by up to 99 percent

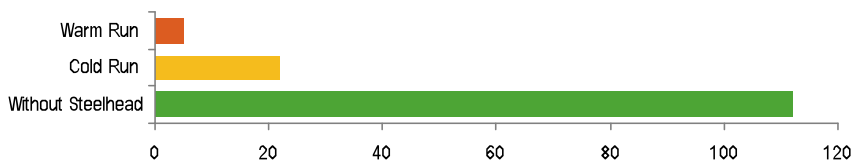
TESTING PARAMETERS

*Notes R8 was tested in a simulated WAN environment using 100 ms latency across T1 speed, representative of a Los Angeles to New York WAN connection.

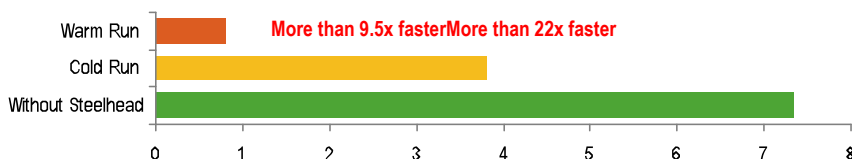
The Domino Server and Lotus Notes client were in their default configuration (port-level encryption and compression were not enabled). A wide array of functions were tested, including:

- Login
- Email
- Calendaring
- Saving attachments

Sending Email with Attachment (7.3 MB) – Time to Complete (in seconds)



Sending Email with Attachment – Bandwidth Utilization (in megabytes)



DEPLOYMENT BENEFITS

Deploying Riverbed in conjunction with Lotus Notes provides multiple benefits, including:

- **Higher Productivity.** Users spend less time downloading and sharing information through standard Notes applications. Collaboration becomes easier and more effective. Remote users have less incentive to avoid using company-standard applications.
- **Lower Bandwidth Utilization.** Bandwidth upgrades can be delayed or eliminated with no performance degradation.
- **Server Centralization.** Steelhead efficiency allows companies to centralize Notes servers with no adverse effects on users.

Steelhead Appliance Features

Steelhead appliances leverage a combination of patented data reduction, TCP optimization, and application-level throughput optimizations, as well as remote office file and management functionality, to provide a comprehensive solution for WAN optimization that scales across a broad range of applications and network topologies.

Scalable Data Referencing (SDR) – Riverbed’s SDR algorithms work across all TCP applications including Microsoft Office, Lotus Notes, CAD, ERP, NFS, FTP, and HTTP, to ensure the same data is never sent more than once over the WAN. SDR reduces bandwidth consumption for many applications by 60 percent to 95 percent and sometimes more.

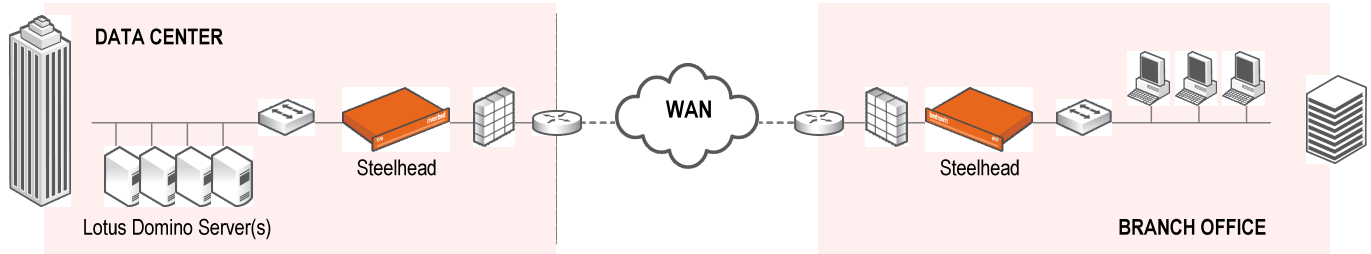
Transparent Pre-Population – Appliance data stores can be automatically and transparently pre-populated with new file system or email data to accelerate the initial access to this data by the client.

Application-Specific Optimizations – Steelhead appliances minimize the impact of WAN latencies on applications. By minimizing round trips and payloads generated at the application layer, Riverbed provides additional order-of-magnitude throughput increases to Lotus Notes and many other applications including Windows file sharing (CIFS), Exchange (MAPI), Web (HTTP), Database (MS-SQL), FTP, and backup and replication.

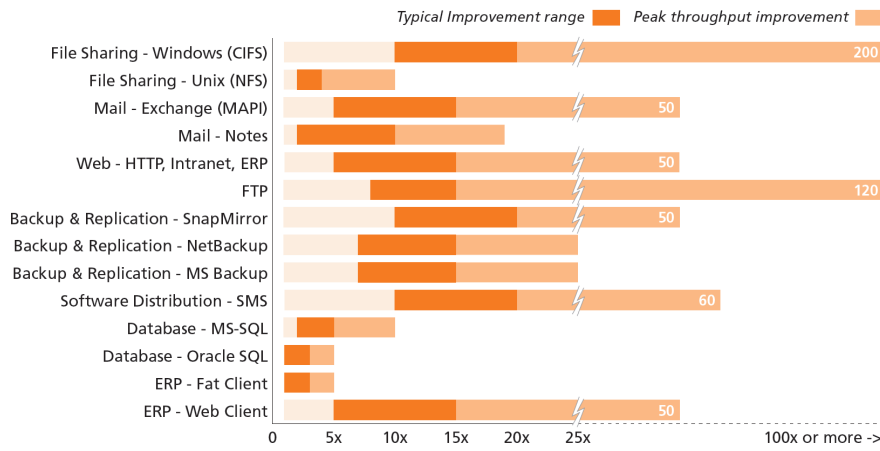
Virtual Window Expansion (VWE) – VWE enables applications to overcome TCP windowing limitations to dramatically increase the amount of data that can be sent in a single round trip.

High-Speed TCP (HS-TCP) – For high latency, high bandwidth links, unaided TCP often fails to fill the link, leaving much of the WAN bandwidth unusable. HS-TCP is available on the Steelhead 5010 and supports up to 750 Mbps per connection for blazing fast data replication and backup.

Typical Deployment Architecture



Steelhead Appliances Accelerate a Broad Range of Applications



About Riverbed

Riverbed is the IT performance company. WAN optimization solutions from Riverbed liberate businesses from common IT constraints by increasing application performance, enabling consolidation, and providing enterprise-wide network and application visibility – all while eliminating the need to increase bandwidth, storage or servers.



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